Siyi Xu

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Work Experience

2024 – present Associate Astronomer (*Tenured*), Science User Support Department
Gemini Observatory/NSF's NOIRLab, Tucson, USA
Develop and implement Gemini user support and communication plan, strategic planning for the observatory

2025 – present Exoplanet Discipline Scientist (*part-time*)
International Space Science Institute (ISSI), Bern, Switzerland
Establish new initiatives, leverage ISSI's unique resources to organize impactful workshops, forums, and meetings

2021 – 2024 Associate Astronomer, Science Operations
2017 – 2021 Assistant Astronomer, Science Operations
Gemini Observatory/NSF's NOIRLab, Hilo, USA
Tenure-track astronomer, 50% for observatory support and 50% for research
Instrument scientist for GNIRS & MAROON-X, Project Scientist for IGRINS-2
Nightime Observer (>50 nights), Queue Coordinator (>200 days),
Contact Scientist (>200 programs)

2014 – 2017 Postdoctoral Fellow, Directorate for science
European Southern Observatory, Garching, Germany
Independent research fellowship

Fellow Astronomer, Science Operations
Cerro Paranal Observatory/Very Large Telescope, Chile
Science operations (100 nights) with X-SHOOTER, UVES, & FLAMES quality assessment of the data, and support of visitors

Education

2010 – 2014 **Ph.D. Astronomy**, Advisor: Michael A. Jura
University of California, Los Angeles, USA

2006 – 2010 **B.S. Astronomy**
Nanjing University, China

Telescope Time & Awards

Telescope Time as Principal Investigator

Hubble Space Telescope
COS & *STIS* (67 orbits, Grant $\sim$ $300,000)
GO #14117, #14467, #14646, #15155, GO #15494, GO #15854, GO #16204

Spitzer Space Telescope
IRAC (90 hr): #10175, #12128, #13065, #14220

Keck Telescope
NIRES (2 nights, NASA Grant $\sim$ $30,000): 2023B_N159, 2025A_N123
HIRESb & *HIRESr* (10 nights, NASA Grant $\sim$ $90,000)
2019A_N049, 2019B_N072, 2020A_N018, 2020B_N124, 2021A_N056, 2021B_N075

Gemini Observatory
GMOS (23 hr): GN-2020B-Q-131, GN-2021B-FT-110, GS-2025A-Q-142, GN-2025A-Q-144
GNIRS (13 hr): GN-2019B-DD-107, GN-2021B-Q-325, GN-2023B-Q-327
NIRI (24 hr): GN-2017B-FT-22, GN-2018B-FT-208, GN-2019A-Q-303, GN-2019B-Q-237
FLAMINGOS-2 (34 hr): GS-2018B-FT-204, GS-2019A-Q-301, GS-2019B-Q-237, GS-2021B-Q-244, GS-2022A-FT-205, GS-2023A-FT-210, GS-2023B-Q-231
Zorro (2 hr): GS-2022B-FT-107
MAROON-X (8.4 hr): GN-2023B-FT-107, 2024A-FT-101

Very Large Telescope
X-SHOOTER (91 hr, 2018-2020): 103.C-0431, 104.C-0107, 105.C-0518, 106.2130
HAWKI (8 hr, 2017): 099.C-0082
SPHERE (6 hr, 2014-2017): 60.A-9373, 099.C-0264
FORS2 (5 hr, 2016): 296.C-0524
UVES (25 hr, 2015): 095.C-0439, 095.C-0564, 096.C-0132, 096.C-0135

Awards & Grants

NASA Topical Workshops, Symposiums, and Conferences (TWSC-24) in Space and Earth Sciences and Technology, 2024 (PI: N. Hinkel)
Leverhulme Center for Life in the Universe, invited visitor, University of Cambridge, UK, 2024
AAS Dependent Care Award, 2024
NASA Citizen Science Seed Funding proposal, 2023 (PI: A. Meisner)
Rice Family Fund Fellowship, 2022
NASA XRP Grant, *Characterizing Rejuvenated Exoplanetary Systems*, 2021 (PI: K. Su)
AURA, *Science Award*, 2020
Scialog Research Grant, $55,000, *Heising-Simons Foundation*, 2019
Scialog Fellow, *Research Corporation & Heising-Simons Foundation*, 2019
Seal of Excellence, *Marie Sklodowska-Curie Actions*, 2017
Best Talk, *ESO Science Day*, 2016
Best Presentation, *Frontiers of Stellar Spectroscopy*, Heidelberg, 2015
International Astronomical Union travel grant, 2012
Excellence Completion of *National Undergraduate Innovative Program*, Nanjing University, 2008
Renmin Fellowship, Nanjing University, 2007

Service

Proposal & Grant Review	*Gemini* DDT Committee, 2025 *NOIRLab* Proposal, Galactic TAC Chair, 2025A *NASA ULTRASAT*, Review Panel, 2023 *Israel Science Foundation*, grant reviewer, 2021 *JWST* Cycles 3 & 4, External Reviewer, 2023 *to* 2024 *JWST* Cycle 1, Review Panel, 2021 *Spitzer* DDT, Reviewer, 2019 *Hubble* Cycle 26 & 27, External Reviewer, 2018 *to* 2019 *Hubble* Cycle 25, Review Panel, 2017 *GRAVITY* Science Verification Proposal Selection Committee, 2016 *NASA Exoplanets Research Program*, External Review, 2016 *ALMA* Cycle 4, Technical Secretary, 2016
Instrumentation Project	*Gemini/GHOST System Verification*, Lead, 2023 *Gemini/IGRINS-2*, Project Scientist, 2022 *to* present *Gemini/GNIRS IFU Upgrade*, Project Scientist, 2019 *to* 2022 *Gemini/GNIRS Refurbishment*, Project Scientist, 2019 *to* 2022 *Gemini Program Platform*, Inception Design Review, 2020 *Gemini Program Platform*, Conceptual Design Review, 2019
Hiring Committee	*Gemini Director Hiring Committee*, 2024 *NOIRLab Integrated Hiring Committee*, 2023 *NOIRLab Fellowship Committee*, 2023 *Gemini Science Fellow Selection Committee*, 2020 *ESO Fellow Selection Committee*, Garching, 2017
Other Committee Service	*Habitable World Observatory*, Stars & Stellar Population sub-group, steering committee, 2024 *to* present *Dark Energy Spectroscopic Instrument (DESI)* collaboration, full-member, 2024 *to* present Reviews in Mineralogy & Geochemistry (RiMG): *Exoplanets: Compositions, Mineralogy, Evolution*, Editor, 2024 *LSST Catalyst fellowship*, ideas lab, organizing committee, 2022 *NOIRLab/CSDC Data Strategy Team*, 2022 *to* 2024 *NOIRLab Library Council Committee*, 2021 *to* 2023 *NOIRLab Strategic Vision Team*, 2020
Referee for	*AAS Journals* *Astronomy & Astrophysics* *Monthly Notices of the Royal Astronomical Society* *Nature* *Nature Astronomy*

Meetings or Colloquia Organized	*24th European White Dwarf Workshop*, Barcelona, Spain, 2024 (*SOC*) *Dust Devils: Debris Disks in the Sonoran Desert*, Tucson, 2024 (*SOC*) AAS 243 Splinter Session: *The Present and Future of Exoplanet Science with the Gemini Observatory*, New Orleans, 2024 *Gemini Science Meeting*, Korea, 2022 (*SOC*) *Gemini Science Meeting*, virtual, 2021 (*SOC co-chair*) *JWST Proposal Workshop*, Hilo, 2020 (*SOC & LOC*) *IAU Symposium 357: White Dwarfs as Probes of Fundamental Physics and Tracers of Planetary, Stellar & Galactic Evolution*, Hilo, 2019 (*SOC & LOC*) *Planetary Systems Beyond The Main Sequence II*, Isreal, 2017 (*SOC*) *Wine & Cheese talk*, ESO, 2015 *to* 2017 *Stellar Coffee and Planetary Tea*, ESO & MPA/MPE, 2014 *to* 2016 *Astronomy Graduate Colloquium Coordinator*, UCLA, 2012 *to* 2013 *Astronomy Journal Club Coordinator*, UCLA, 2011 *to* 2012

Public Outreach & Press

Education & Public Outreach	Student & Postdoc Mentor for the *DESI* (*Dark Energy Spectroscopic Instrument*) Collaboration, 2023 *to* 2024 Astronomy Educator, *Journey Through the Universe*, Hilo, US, 2019 *to* 2023 Astronomy on Tap: *Where are we in five billion years?* (Chinese), 2022 NOIRLab Stories: *A glimpse into the Solar System's future*, 2021 Speaker at *NOIRLab Live*, 2020 Career Panel, *Kea'au Middle School*, Hilo, US, 2018 Public Talk, Astronomy for non-Astronomers, *ESO*, Germany, 2017 Messenger article, *Fellows at ESO*, 166, 68, 2016 Volunteer at *ESO Open House Day*, Germany, 2016 Astronomer in *Hubble Podcast #95*, 2016 Public Talk, *Kunshan Middle School*, China, 2015 Host shows at *UCLA planetarium*, US, 2011 *to* 2014 Member of UCLA outreach group *Astronomy Live!*, US, 2010 *to* 2014 Vice President of Astronomy Club, *Nanjing University*, China, 2008 *to* 2009
Selected Press Releases	Nature/NOIRLab: *Rocky Exoplanets Are Even Stranger Than We Thought*, 2021 NASA/NOIRLab: *NASA Missions Spy First Possible 'Survivor' Planet Hugging White Dwarf Star*, 2020 Astronomy Magazine: *White Dwarfs and Water*, 2018 EurekAlert: *Study of material surrounding distant stars shows Earth's ingredients 'pretty normal'*, 2018 STScI/NASA/ESA: *Hubble finds big brother of Halley's Comet ripped apart by white dwarf*, 2017 NASA/JPL: *Can Planets be Rejuvenated around Dead Stars?* 2015 Kunshan Daily: *The Quest for the Brightest Star*, 2015 Physics World: *Cold Hydrogen Molecules Found on Hot Stars*, 2013

Student Supervision

Students Supervised

Érika Le Bourdais (with Prof. P. Dufour), *University of Montreal*, Canada, Ph.D. student, 2022 *to* present
Elene Zaldua Del Olmo (with Prof. M. Kissler-Patig), *Universidad Complutense de Madrid*, Spain, M.S. student, 2022 *to* 2023
Dylan Owens, *Gemini* science intern, 2021 *to* 2022
Cristina Favieres (with Prof. M. Kissler-Patig), *Universidad Complutense de Madrid*, Spain, M.S. student, 2021 *to* 2022
Rocio Kiman (with Dr. J. Faherty), *American Museum of Natural History*, US, Ph.D. student, 2020 *to* 2022
Laura Rogers (with Dr. A. Bonsor), *University of Cambridge*, UK, Ph.D. student, 2017 *to* 2022
Samuel Lai, *Gemini* science intern, 2020
Amy Steele (with Dr. J. Debes), *University of Maryland*, US, Ph.D. student, Ph.D. student, 2018 *to* 2020
Maude Fortin-Archambault (with Prof. P. Dufour), *University of Montreal*, Canada, M.S. student, 2018 *to* 2019
Angeliki Psaridi (with Prof. M. Kissler-Patig), *Ludwig Maximilian University*, Germany, M.S. student, 2018 *to* 2019
Pa Chia Thao, *Gemini* science intern, 2018
Nathaniel N. Monson (with Prof. E. D. Young), *UCLA*, US, Ph.D. student, 2016 *to* 2017
Na'ama Hallakoun, *ESO*, Germany, Ph.D. student, 2015 *to* 2017
Guochao Sun, *UCLA*, US, B.S. student, 2013 *to* 2014
Blake Pantoja, *REU* student, US, summer 2013
Misaki Nabeshima, *UCLA*, US, B.S. student, 2012 *to* 2013

Talks & Colloquia

Invited Conference Talks

- ISSI Workshop: *Exocomets: Bridging our Understanding of Minor Bodies in Solar and Exoplanetary Systems*, Bern, Switzerland, 2024
- Gordon Research Conference: *Origins of Solar Systems*, Boston, US, 2023
- Aspen Winter Conference: *Exoplanet Systems and Stellar Life Cycles: Late-Stage and Post-MS Systems*, Aspen, US, 2023
- KITP Conference: *White Dwarfs as Probes of the Evolution of Planets, Stars the Milky Way and the Expanding Universe*, Santa Barbara, US, 2022
- *Celebrating the Legacy of the Spitzer Space Telescope*, Caltech, US, 2020
- *Exocomets: Understanding the composition of planetary building blocks*, Lorentz center, Netherlands, 2019
- *Goldschmidt Conference*, Boston, US, 2018
- *Exoplanets Orbiting Hot Stars*, Vanderbilt University, US, 2018
- Gordon Research Conference: *Origins of Solar Systems*, Boston, US, 2017
- *From Dust to Planet*, Lyon Observatory, France, 2016
- *Michael Jura Memorial Symposium*, UCLA, US, 2016
- *American Astronomical Society Meeting #221*, Long Beach, US, 2012

Talks & Colloquia

- *Colloquium Talk*, University of Oklahoma, Oklahoma City, US, 2024
- *Colloquium Talk*, Boston University, Boston, US, 2023
- *Rocky Worlds Discussion*, 2023 *(virtual)*
- *Colloquium Talk*, University of Montreal, Canada, 2023
- *Colloquium Talk*, Nanjing University, China, 2022 *(virtual)*
- *Seminar Talk*, Carnegie Institution for Science, Washington D. C., US, 2022 *(virtual)*
- *Colloquium Talk*, University of North Carolina, Chapel Hill, US, 2021 *(virtual)*
- *Colloquium Talk*, University of Warwick, UK, 2021 *(virtual)*
- *Exoplanet seminar*, Chinese Academy of Sciences South America Center for Astronomy (CASSACA), Santiago, Chile, 2020 *(virtual)*
- *Colloquium talk*, Earth, Planetary, and Space Science (EPSS), UCLA, US, 2020
- *Lunch talk*, Keck Observatory, Waimea, US, 2019
- *Colloquium talk*, NOAO, Tucson, US, 2019
- *Colloquium talk*, California State University, Fresno, US, 2019
- *Colloquium talk*, Nanjing University, China, 2018
- *Colloquium talk*, Institute for Astronomy, Hawaii, US, 2017
- *Colloquium talk*, ASIAA, Taiwan, 2016
- *Seminar*, Pontificia Universidad Catolica de Chile (PUC), Chile, 2016
- *Star and Planet Formation Seminar*, STScI, Baltimore, US, 2016
- *Exoplanet Seminar Talk*, University of Cambridge, UK, 2016
- *Colloquium talk*, University of Tuebingen, Germany, 2016
- *NOAO flash talk*, Arizona, US, 2016
- *Colloquium Talk*, University of Warwick, UK, 2015
- *Colloquium Talk*, ETH, Zurich, Switzerland, 2015
- *CRAL seminar*, Centre de Recherche Astrophysique de Lyon, France, 2015
- *Lunch Talk*, Department of Terrestrial Magnetism, Washington D. C., US, 2014
- *Lunch Talk*, Carnegie Observatories, Pasadena, US, 2013
- *Lunch Talk*, Nanjing University, China, 2013
- *Lunch talk*, National Astronomical Observatories, Beijing, China, 2013

Selected Refereed Publications

See ORCID 0000-0002-8808-4282 for a complete publication list
† *Students/postdocs supervised by S.X.*

First Author:

18. *Modeling Circumstellar Gas Emission around a White Dwarf using Cloudy*
Xu, S., Yeh, S., Rogers, L. K.†, et al., 2024, AJ, 167, 248

17. *The chemistry of extra-solar materials from white dwarf planetary systems*
Xu, S., Rogers, L. K.†, & Blouin, S., Reviews in Mineralogy & Geochemistry (RiMG), 90, 171

16. *Gemini/GMOS Transmission Spectroscopy of the Grazing Planet Candidate WD 1856 b*
Xu, S., Diamond-Lowe, H., & MacDonald J. R.,et al. 2021, AJ, 162, 292

15. *Exo-Geology: Insights from Dead Stars*
Xu, S., & Bonsor, A., Elements, 2021, v17n4

14. *Infrared Excesses around Bright White Dwarfs from Gaia and unWISE I*
Xu, S., Lai, S.†, & Dennihy, E.† 2020, ApJ, 902, 127

13. *Compositions of Planetary Debris around Dusty White Dwarfs*
Xu, S., Dufour, P., Klein, B., et al. 2019, AJ, 158, 242

12. *Shallow Ultraviolet Transits of WD 1145+017*
Xu, S., Hallakoun, N.†, Gary, B., et al. 2019, AJ, 157, 255

11. *Infrared Variability of Two Dusty White Dwarfs*
Xu, S., Su, K. Y. L., Rogers, L. K.†, et al. 2018, ApJ, 866, 108

10. *A dearth of small particles in the transiting material around the white dwarf WD 1145+017*
Xu, S., Rappaport, S., van Lieshout, R., et al. 2018, MNRAS, 474, 4795

9. *The Chemical Composition of an Extrasolar Kuiper-Belt-Object*
Xu, S., Zuckerman, B., Dufour, P., et al. 2017, ApJL, 836, L7

8. *Evidence for Gas from a Disintegrating Extrasolar Asteroid*
Xu, S., Jura, M., Dufour, P., et al. 2016, ApJL, 816, L22

7. *An Extreme-AO Search for Giant Planets around a White Dwarf: VLT/SPHERE performance on a faint target GD 50*
Xu, S., Ertel, S., Wahhaj, Z., et al. 2015, A&A, 579, L8

6. *A Young White Dwarf with an Infrared Excess*
Xu, S., Jura, M., Pantoja, B.†, et al. 2015, ApJL, 806, L5

5. *The Drop during Less than 300 Days of A Dusty White Dwarf's Infrared Luminosity*
Xu, S., & Jura, M. 2014, ApJL, 792, L39

4. *Elemental Compositions of Two Extrasolar Rocky Planetesimals*
Xu, S., Jura, M., Koester, D., et al. 2014, ApJ, 783, 79

3. *Two Beyond-Primitive Extrasolar Planetesimals*
Xu, S., Jura, M., Klein, B., et al. 2013, ApJ, 766, 132

2. *Discovery of Molecular Hydrogen in White Dwarf Atmospheres*
Xu, S., Jura, M., Koester, D., et al. 2013, ApJL, 766, L18

1. *Spitzer Observations of White Dwarfs: the Missing Planetary Debris Around DZ Stars*
Xu, S., & Jura, M. 2012, ApJ, 745, 88

Co-Author with Significant Contribution:

25. *Revisiting the Chemical Composition of WD 1145+017: Impact of Circumstellar Disk Contamination on Photospheric Abundances*
Le Bourdais, É.†, Dufour, P., & **Xu, S.** 2024, ApJ

24. *A Sample of 554 White Dwarfs Showing Infrared Excess from Gaia EDR3 and CatWISE Catalogs*
Favieres, C. M.†, Kissler-Patig M., **Xu, S.**, Bonsor, A., 2024, A&A, 688, A168

23. *Seven white dwarfs with circumstellar gas discs II: tracing the composition of exoplanetary building blocks*
Rogers, L. K.†, Bonsor, A., **Xu, S.**, et al. MNRAS, 2024, 532, 3866

22. *Seven white dwarfs with circumstellar gas discs I: White dwarf parameters and pollutant abundances*
Rogers, L. K.†, Bonsor, A., **Xu, S.**, et al. MNRAS, 2024, 527, 6038

21. *Disk or Companion: Characterizing Excess Infrared Flux in Seven White Dwarf Systems with Near-infrared Spectroscopy*
Owens, D.†, **Xu, S.**, Manjavacas, E., et al. 2023, AJ, 166, 5

20. *wdwarfdate: A Python Package to Derive Bayesian Ages of White Dwarfs*
Kiman, R.†, **Xu, S.**, Faherty, J. K., et al. 2022, AJ, 164, 62

19. *Gaia 0007-1605: an old triple system with an inner brown dwarf-white dwarf binary and an outer white dwarf companion*
Rebassa-Mansergas, A., **Xu, S.**, Raddi, R., et al. 2022, ApJL, 927, L31

18. *No evidence for a strong decrease of planetesimal accretion in old white dwarfs*
Blouin, S., & **Xu, S.**, 2022, MNRAS, 510, 1059

17. *Polluted White Dwarfs Reveal Exotic Mantle Rock Types on Exoplanets in our Solar Neighborhood*
Putirka, K., & **Xu, S.**, 2021, Nature Communications,12, 6168

16. *Infrared Excesses around Bright White Dwarfs from Gaia and unWISE II*
Lai, S.†, Dennihy, E.†, **Xu, S.**, et al., 2021, ApJ, 920, 156L

15. *A Characterization of the Circumstellar Gas around WD 1124-293 Using Cloudy*
Steele, A.†, Debes, J., **Xu, S.**, et al. 2021, ApJ, 911, 25

14. *Five New Post-Main-Sequence Debris Disks with Gaseous Emission*
Dennihy, E.†, **Xu, S.**, Lai, S.†, et al. 2020, ApJ, 905, 5

13. *A Giant Planet Candidate Transiting a White Dwarf*
Vanderbrug, A., Rappaport, S., **Xu, S.**, et al. 2020, Nature, 585, 363

12. *Spitzer's debris disk legacy from main-sequence stars to white dwarfs*
Chen, C. H., Su, K. Y. L., & **Xu, S.** 2020, Nature Astronomy, 4, 328

11. *Near-infrared variability in dusty white dwarfs: tracing the accretion of planetary material*
Rogers, L. K.†, **Xu, S.**, Bonsor, A., et al. 2020, MNRAS, 494, 2861

10. *Modeling of the Variable Circumstellar Absorption Features of WD 1145+017*
Fortin-Archambault, M.†, Dufour, P., & **Xu, S.** 2020, ApJ, 888, 47

9. *The critical binary star separation for a planetary system origin of white dwarf pollution*
Veras, D., **Xu, S**., & Rebassa-Mansergas, A. 2018, MNRAS, 473, 2871

8. *Planetary Systems around White Dwarfs*
Bonsor, A., & **Xu, S.** 2017, Astrophysics and Space Science Library, 445, 229

7. *Once in a blue moon: detection of 'bluing' during debris transits in the white dwarf WD 1145+017*
Hallakoun, N.†, **Xu, S.**, Maoz, D., et al. 2017, MNRAS, 469, 3213

6. *^{26}Al in the Early Solar System: Not so Unusual After All*
Jura, M., **Xu, S.**, & Young, E. D. 2013, ApJL, 775, L41

5. *The Hyades Cluster: Identification of a Planetary System and Escaping White Dwarfs*
Zuckerman, B., **Xu, S.**, Klein, B., et al. 2013, ApJ, 770, 140

4. *Extrasolar Refractory-Dominated Planetesimals: an Assessment*
Jura, M., & **Xu, S.** 2013, AJ, 145, 30

3. *Two Extrasolar Asteroids with Low Volatile-Element Mass Fractions*
Jura, M., **Xu, S.**, Klein, B., et al. 2012, ApJ, 750, 69

2. *Water Fractions in Extrasolar Planetesimals*
Jura, M., & **Xu, S.** 2012, AJ, 143, 6

1. *The Survival of Water within Extrasolar Minor Planets*
Jura, M., & **Xu, S.** 2010, AJ, 140, 1129